656.3
P12a
no.2

The ICE DEALER

An Analysis of his Transportation Problem

TABLE OF CONTENTS

Introduction.

The purpose of this booklet.
The Ice Dealer's business problem.
Solution of the Ice Dealer's problem.

The Installation of Transportation Units.

A survey of conditions bearing on increasing the efficiency of the Ice Dealer's transportation system; the value of analysis by a competent transportation engineer.
Location of business; layout of the plant; character of business; growth of business; the traffic man; routing the trucks; maintenance; garaging; horses; cost accounting; drivers; trailers; helpers and loaders; winter and summer hauling; conclusions of general survey.

The Making of Transportation Units.

Why an Ice Dealer saves money by purchasing trucks from a permanent manufacturer; what the truck engineer has to do with low operating costs; the importance of control of manufacture from raw material or as close to that state as possible.

The Maintenance of Transportation Units.

Intelligent operation and proper maintenance as precautionary measures; carelessness necessitates service repairs; Packard's facilities for supplying parts quickly.

The Unit-Mile.

Why and what is it? How it is figured.

The Pneumatic-Tired Truck.

Photographs showing the new Packard pneumatic-tired trucks.

Truck Operating Costs.

What it costs to operate Packards; figures selected to show the difference between the cost of efficient and inefficient operation.

P12a
No. 2

Time is saved and service is improved by having trucks supply wagons on routes.

THE ICE DEALER

An Analysis of His Transportation Problem

THE PURPOSE *of this booklet is to place before you in a general way what other ice distributers and the transportation engineers of this company's organization have learned about hauling ice to the end that you may profit thereby.—Packard Motor Car Company.*

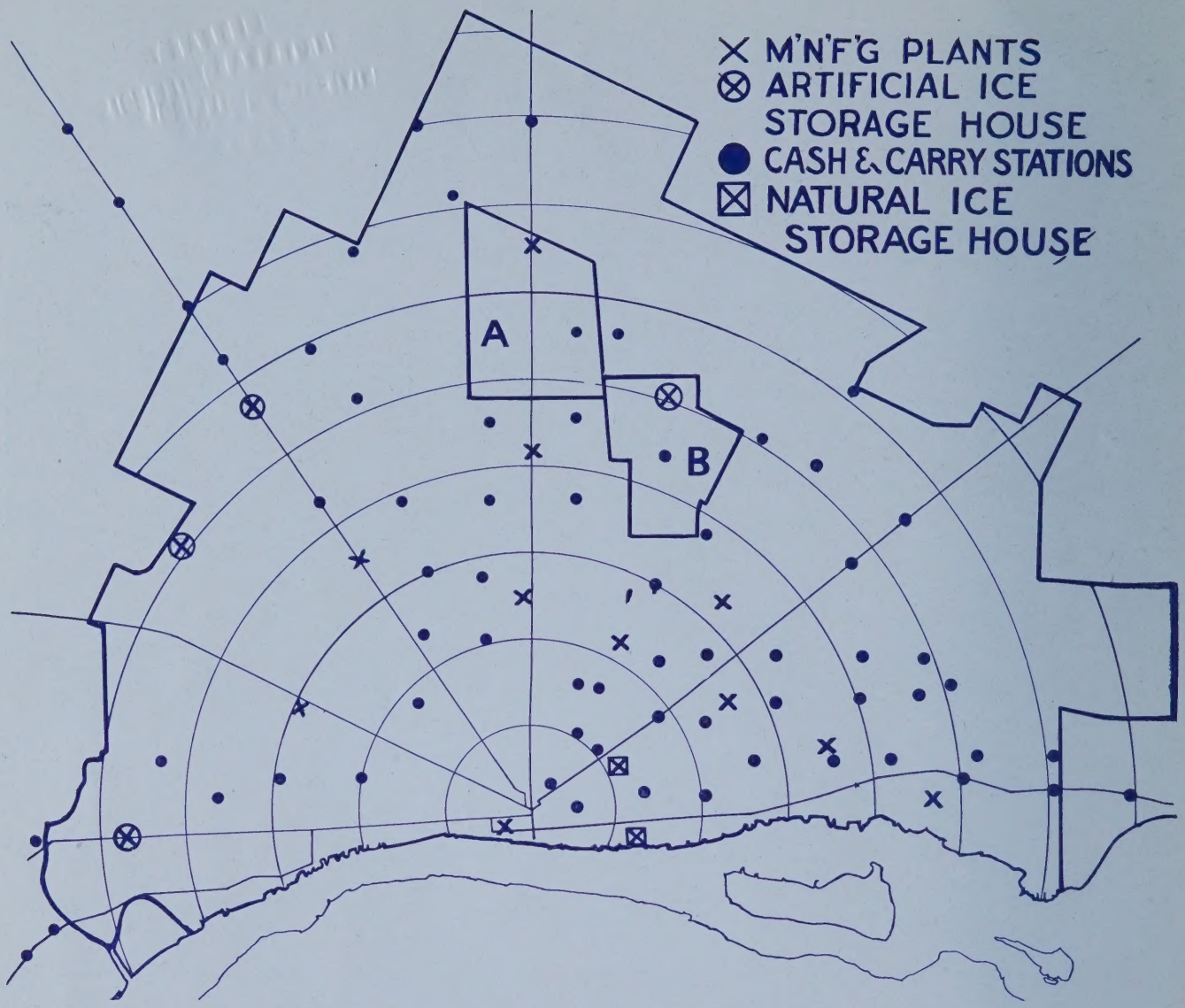
The Ice Dealer's Business Problem

EVERY business has its problems to contend with in these days of rapidly changing conditions. The Ice Dealer has many. The distributer of natural ice always faces the possibility of an open winter and an inadequate supply. The manufacturer, even with his plant or plants running at full capacity, is often unable to meet the unusual demand of the peak season, the hot summer months. Both have their labor problems, the rising cost of doing business and many other things to contend with.

Those who are in the ice business know that the public is interested only in getting ice when it needs it most. Service is what customers of the ice distributer demand. And they cannot be blamed for that, because in the past few years ice distributers have employed advertising in many forms to create a greater demand for ice. In justice to ice distributers generally it is only fair to say they are making an honest attempt to keep faith with their customers. Often the expense of attempting satisfactory service in the summer-time is so large that profits are temporarily wiped out.

Solution of the Ice Dealer's Problem

An ideal solution of the ice dealer's business problem would of course be cutting down ex-



Distribution Scheme of the General Ice Delivery Co., Detroit

THIS outline map of the city of Detroit pictures forcibly the highly intensive delivery scheme of the General Ice Delivery Co. The spaces marked A and B respectively are the city of Highland Park and village of Hamtramck, both entirely surrounded by the city of Detroit. Each circle represents one mile drawn with the city hall as a center. The numerous black dots representing "cash and carry" stations will at once strike most every ice distributer. At these stations small storage houses are located and the people in such neighborhoods carry the ice away themselves, in boys' express wagons, in baby carts, anything on wheels. Many automobiles also carry ice away from such stations.

penses everywhere, with a gain in efficiency in each department. Even if practical, such a discussion is outside the scope of this book. We are concerned here only with increasing the efficiency of that end of the business involving transportation, and particularly with the transportation required to give satisfactory service to the customer. Since that service is the money-getting end of the chain we shall go back to the beginning and consider in importance all those factors that have a bearing on it.

Three of these factors are the installation of transportation units, the making of transportation units and the maintenance of such units. The first and the last have a direct relationship to your business. The second, the making of trucks, is not so direct, but just as important as the other two. Unless a truck is built right it cannot serve efficiently.

One of the Packards owned by the General Ice Delivery Co., Detroit.

THE INSTALLATION OF TRANSPORTATION UNITS

A survey of conditions bearing on increasing the efficiency of the ice dealer's transportation system; the value of analysis by a competent transportation engineer.

Location of the business has a great deal to do with the successful operation of an ice distributer's transportation system. Natural ice is harvested in the northern part of the United States and in all of Canada. Creating the supply is a manufacturing problem in all of the United States south of the Ohio river line.

Location of the Business

The manufacturer whose plant is situated at or near the center of a city on a railroad siding has an advantage, as a general rule, over the plant situated in the outskirts. The former can build up his business from the center of a circle. The latter has only a half or perhaps only a quarter circle to sell ice in. It is much easier for the first manufacturer to penetrate the territory of the second than it is for the second to get into that of the first. The second can meet this competition only by price cutting or by an unusually efficient transportation system. He can, of course, establish storage houses, stables and garages in his competitor's territory, thereby increasing his investment and also his overhead.

Many cities in the northern part of this continent are located on or near large bodies of water from which ice is harvested. Everyone is familiar with the ice storage houses located on the shores of such waters. Ice from such storage houses is brought in to the city served by wagon, by rail, by boat and by motor truck, mostly in the summer-time when meltage is greatest. Some distributers of natural ice instead of erecting a storage house on the shore of the water where the ice is harvested load it into wagons, trucks, or freight cars and haul it to storage houses in the nearby city or cities.

It costs a great deal of money to handle ice only once more than necessary and this is one of the angles of transportation ice distributers are studying closely.

The foregoing locational problems are cited merely as examples for the benefit of those in-

A vertical hoist body for icing freight cars in terminals.

terested. We are not trying to tell you how to run an ice business, but we have found efficient transportation to be so closely linked up with locational problems that the importance of their relationship should be pointed out here.

Layout of the Plant

Closely related to the location of the plant is its layout and equipment generally. Is it on a spur track; is the manufacturing or harvesting equipment of the latest type; could a light weight motor truck fitted with spiked wheels remove snow more quickly than horses; are the loading and unloading arrangements efficient and savers of time; is there plenty of turning room in the yard for wagons and trucks; is the stable or garage located close by or far away from the plant or storage house; is the platform big enough to load more than one or two wagons or trucks at the same time; are the gates of the yard wide enough and plentiful enough so there will be no delay going or coming?

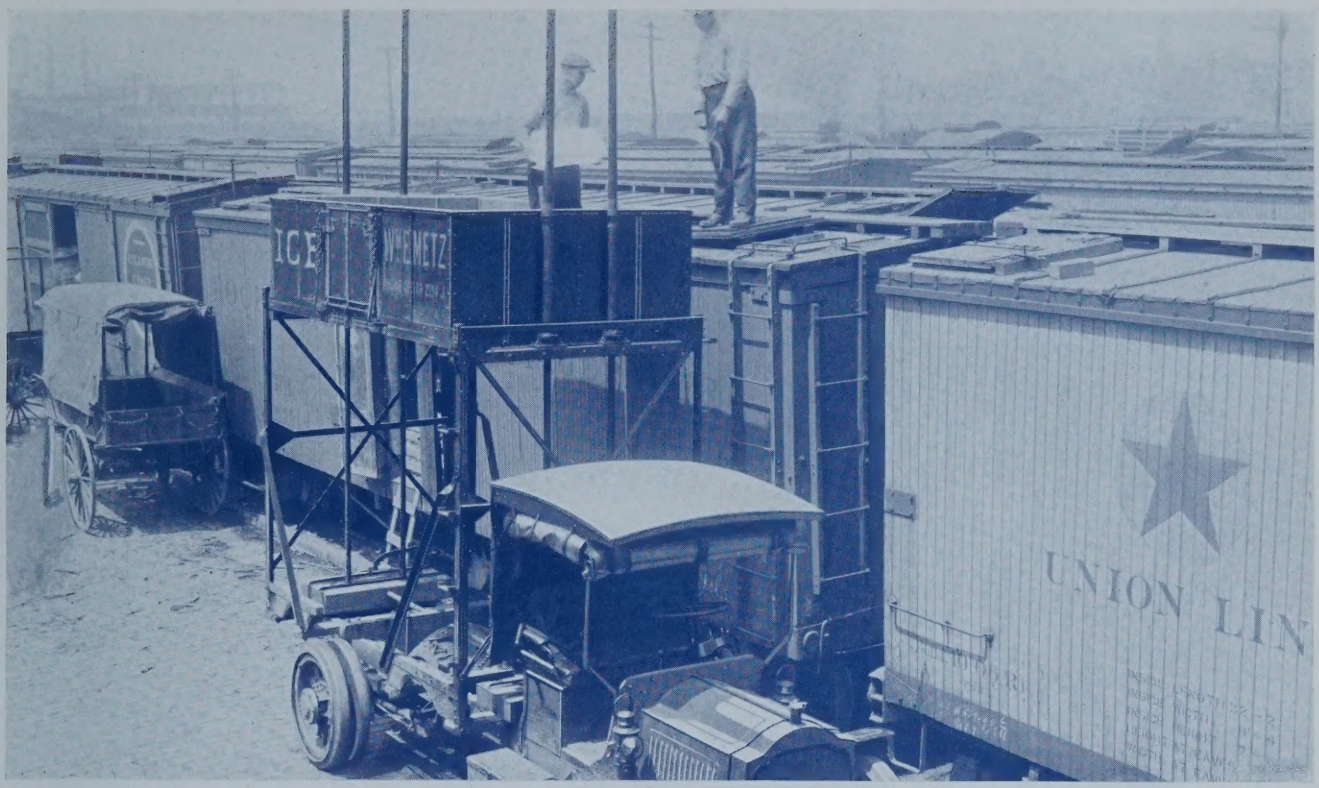
Character of the Business

There is little difference in the fundamentals of applying trucks to the delivery of ice, whether the plant is a manufacturing one or handles natural ice. In the latter case the distance of the water from which the ice is harvested to the city in which the ice is sold is largely the determining factor between rail shipment and motor truck transportation.

Take, for example, a lake five miles from a city. Should the storage house be located at the lake or in the city? If at the lake, the ice is usually hauled into town in the summer when meltage is greatest and time is most valuable. If the storage house is in the city the ice can be hauled in when cut. The use of motor trucks in either case should greatly speed up the hauling job and cut expenses thereof.

Wholesale Deliveries

The motor truck is steadily proving its place in the delivery of ice in wholesale quantities.



Body and load at full elevation, showing how two men ice a car.

Ordinarily the stops in wholesale delivery are not so numerous as in residence delivery. For this kind of business the truck shows at its best over horse and wagon service. It hauls more loads and bigger loads over longer distances at from three to five times the speed per hour of a two-horse team.

There are some ice distributers who make wholesale and residence deliveries from the same wagon. While this avoids some duplication of delivery in the same territory, yet it usually has its drawbacks in lessening service to one or both classes of customers.

House-to-House Delivery

"It can't be done" is the first thing many ice distributers say about the use of the motor truck in house-to-house deliveries. But there are instances where it is being done. While we admit these cases are the exception to the general rule we do believe they are an indication of what can be accomplished when close study is made of a delivery problem.

"It can be tried" is the answer of some ice dealers to "it can't be done." And the first step in trying out motor trucks in house-to-house trade is a comprehensive survey of your transportation system. Such a survey will determine whether the motor trucks should be used to feed the wagons on some routes and whether they can be used profitably for house-to-house trade on other routes.

No matter what the character of the business, wholesale or retail, where the truck is used to feed wagons, it is usually certain to benefit the transportation scheme as a whole. It assures additional speed, saves wear and tear on the horses in the hot season and increases tonnage delivered. Such a plan involves the establishment of definite meeting points for truck and wagons. Of course, there are times in the rush season when even the most carefully planned schedules will be entirely disarranged.

Truck Reliability

Because the ice business is at the maximum of volume in the hot summer months, when a breakdown of any vehicle means rapid meltage, the ice distributer must have the most reliable trucks obtainable.

The extraordinary strength built into all parts of the Packard truck gives it, we believe, a standard of reliability not even approached by any other truck. For instance, Packard live axle strength is 220,000 pounds to the square inch! There are many other facts about the strength of Packard trucks you may be interested in knowing.

A refrigerating plant on wheels running between Detroit and Toledo.

Now let us suppose a survey shows the probability of bettering service and cutting expense of retail deliveries through the use of motor trucks. Let us also assume the survey shows a three-ton truck will eliminate three two-horse teams, and a six-ton truck six two-horse teams in a ten-hour day.

Truck Adds Greater Speed

The first result of the truck installation is greater speed; the second is equal or greater tonnage delivered; a third is more trips and, fourth, longer distances. Before the truck is put in commission we have planned our routes and selected the places in each block where the truck is to stop.

If we send the truck out with a driver and one helper slowness of delivery from truck to houses will probably offset all the other advantages named and make the truck a losing proposition. It is obvious therefore that speed of delivery from truck to each residence must be increased.

How can this speed be attained? By taking some of the men from the displaced rigs. Let us suppose for the sake of illustration that we have decided on a six-ton truck, and, as before stated,

Trucks vs. Horses

What Ice Dealers Have Learned From Actual Experience.

Truck 13 trips per day.

Horses 3 trips per day.

Truck 50 miles per day.

Horses 8 miles per day.

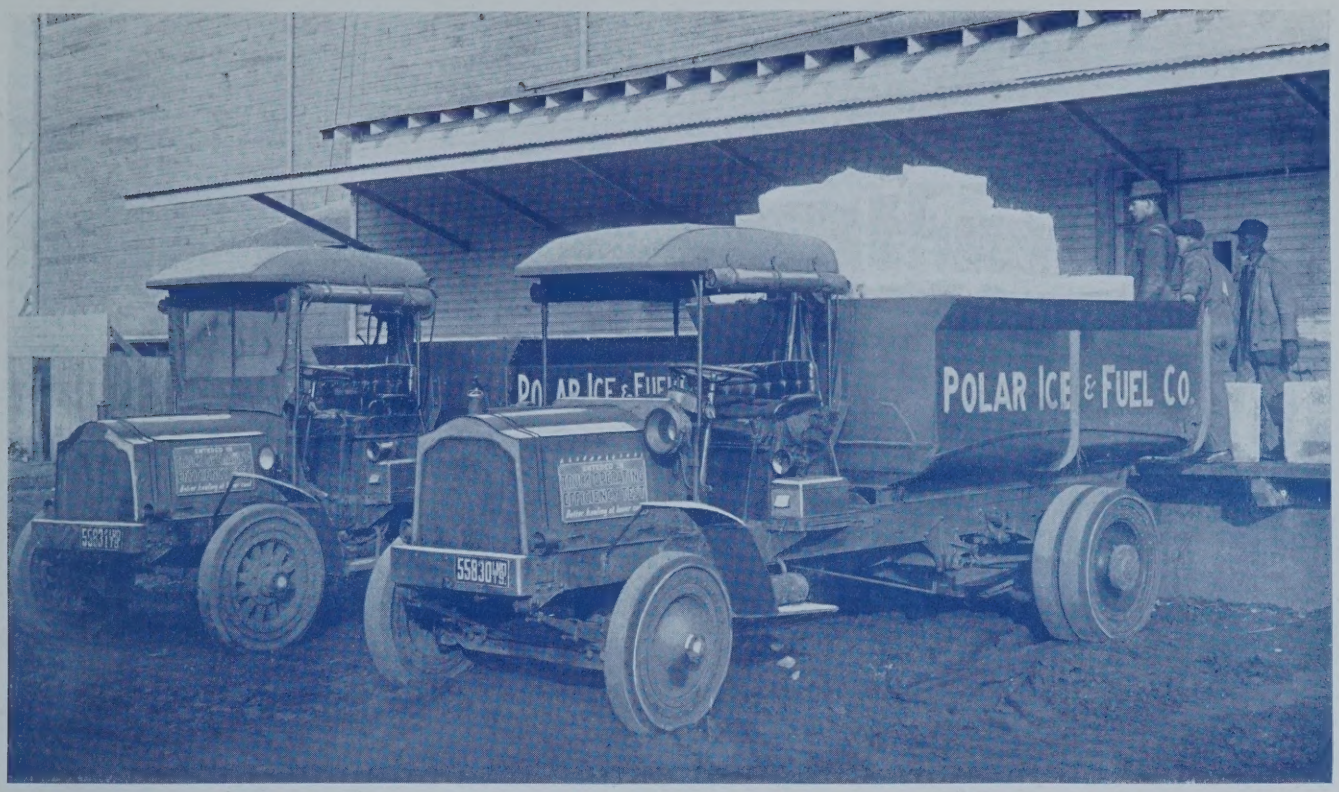
Truck cost per ton.

Horse cost per ton.

Betterment of Service at Same Cost on Percentage Basis

Service with four 2-horse wagons and eight men.

90% betterment from one 5-ton truck and seven single wagons.



Packards owned by the Polar Ice & Fuel Co., Indianapolis.

it will eliminate six two-horse teams, each rig having a driver and helper. Let us take one of these twelve men to drive the truck and five of the remainder as helpers. This gives us a crew of six men. The driver must remain on the truck, the others doing the unloading and delivering. A delivery crew of this size should furnish the speed necessary to match the speed of the truck.

Instead of a six-ton truck on solid tires let us also consider the possibilities of a three-ton truck on pneumatic tires. The speed of the former is about 10 miles an hour and that of the latter 20 miles an hour and more. Does not this 100 per cent increase in speed open up tremendous possibilities? We believe it does.

This speed of 20 miles an hour is about ten times as much as what the most willing team can do in hot weather. On the way from the storage house to the first stop and between long-distance stops the team makes two miles an hour, the solid-tired truck ten and the pneumatic truck can make twenty. Say the last two will average eight and fifteen, each having something in reserve. The horse has no reserve burst of speed.

When the truck is done with the day's work of delivery it can be used all night to haul ice from the manufacturing plant to storage houses from which next morning's deliveries are to be started out. Or it may be used for any other emergency.

No ice business can grow without growth of its transportation system. The growth in transportation should be in efficiency rather than as to the number of units, because the greater the number of units the greater the space needed to house them besides increase of investment and expenses.

Truck Aids Growth of Business

The general tendency in all lines of business is to speed up transportation and the ice business is no exception. Since it is impossible to speed up horses the ice distributer is looking to the motor truck for speed and more efficiency.

The motor truck makes it easier for the ice business to grow. Take again for instance, the ice plant located at one edge of a city or town.

A body that affords protection from the sun and keeps down meltage.

A nine-year-old Packard that carried some mighty loads.

This Cleveland truck is covered with removable top to prevent meltage.

How can it compete with a centrally located plant? It can establish branch storage houses and haul ice to and distribute ice from them. But the establishment of branches means additional investment and overhead. More intensive transportation will help offset this.

It is much easier for the centrally located plant to invade the territory of another plant located in the outskirts because of its location and the fact that the business is spreading out into populated territory. Its delivery area can be extended with little or no additional equipment. So it naturally follows that the best defensive is a strong offensive—a transportation system that has the punch of speed and long-distance ability.

The Traffic Man Routing the Trucks

Every ice business of any consequence at all should have a traffic man who should have the specific duty of routing trucks and the horses and wagons. Since the success of the service in summer-time depends so largely on keeping the transportation units moving, surely the traffic man's duties are of the highest importance.

Many ice distributers now have such a man who has general supervision, with station assistants who have charge of traffic in the territory each station serves.

Many ice distributers maintain their own horses and wagons. To do this it is necessary to establish a blacksmith shop and a workshop fitted with equipment necessary to make repairs on wagons. Some make the bodies for their ice wagons.

Maintenance of Vehicles

The question of truck maintenance is somewhat different than of horses and wagons. The ice distributer who owns trucks has the option of keeping them in good running order himself or having the work done by a motor truck service station.

The first consideration in the maintenance of a motor truck is to find out just what kind of facilities the truck distributer has to maintain

The loading platform should be even with the floor of the truck.

or give service on it. If the truck distributer offers free monthly inspection of the truck it should be taken to the service station for such inspection.

It is just as necessary to keep trucks in good condition as it is to feed horses. Grease and oil cups are put on motor trucks for a purpose; they are to be filled with lubricants to prolong the life of a truck. If you own one or a dozen trucks pick out one man whose job it is to see that your trucks are properly lubricated.

Garaging

Motor trucks should be garaged as near as possible to the manufacturing plant or storage house from which distribution of ice is made. Widely separated units of the establishment means unnecessary investment, increased overhead and a great deal of lost time on the part of the trucks.

Horses

The tendency among ice distributers is to look more closely into the work of the horse from the standpoint of efficiency.

As the ice distributer is in business to make money, this is the proper view to take. If study of your transportation system shows that a motor truck will do the work of several horses and wagons more efficiently than they are doing it, at less cost, the thing to do is install the truck.

Cost Accounting

Before the introduction of the motor truck hardly any line of business made any real attempt to keep comprehensive costs of operating horses and wagons. Many of them make no real attempt today. There are hundreds of firms who give the cost of maintaining a team of horses as three or four dollars a day. As a matter of fact team costs in cities run from eight to twelve dollars a day and more.

No matter whether an ice distributer operates horses and wagons or motor trucks or both his cost accounting system should be complete

The size of the cake of ice often determines the width of the body.

enough to show him just how much expense is attached to each so he can measure up what each does, as well as the other departments of his business.

We strongly urge the installation of the National Standard Truck Cost System for your truck or trucks. Not only does it give you a picture of costs but with study it will show the degree of efficiency with which the motor vehicles are operated and opportunities for improvement.

Drivers and Helpers

It is so hard to get drivers and helpers for ice distribution that appeals are now even being made to college students who are working their way through such institutions. A similar scarcity of competent truck drivers exists. One reason for this is that trucks are being made more rapidly than drivers attain reliability and competency.

Since a driver can make or break the very best truck, we urge getting the very best driver obtainable. Some ice distributers are converting their teamsters and helpers into truck drivers. We invite all those who are doing this to send these men to a Packard truck drivers' school. It makes no difference what make of truck you own or operate.

The traffic man or the owner of the business or both should keep a friendly eye on the drivers and helpers. A driver who has a $5,000 machine under his control is often forgotten, but if he were handed $5,000 in cash someone certainly would take an interest in him. Some firms keep their men interested in their work with the aid of bonus systems. If the driver is to keep the truck oiled up and running right as far as he can keep it running right he should be given time to do so. A few minutes in going over the truck daily may mean hundreds of dollars saved to you. We shall be glad to help you select a competent truck driver.

The trailer has great possibilities in the distribution of ice.

Trailers for Ice Hauling

It is out of the question for a team to pull a trailer behind a wagon, but it is not out of the question for a motor truck to do so. The trailer is being used only here and there in the ice business but we believe it has a great future, especially in wholesale deliveries.

Elsewhere we have suggested the use of a six-ton truck for wholesale ice delivery. With a four-ton trailer behind it, the truck can start out with a ten-ton load. This combination opens up possibilities well worth considering on the part of any ice distributer.

Meltage of Ice

The speed of motor trucks over that of horses lessens ice meltage and makes for satisfied customers. If trucks did nothing else but speed up service to such a point that hundreds of telephone complaints of short weight were eliminated, the ice distributer might well invest in them, or at least learn from a survey of his transportation problem just what he might expect from trucks.

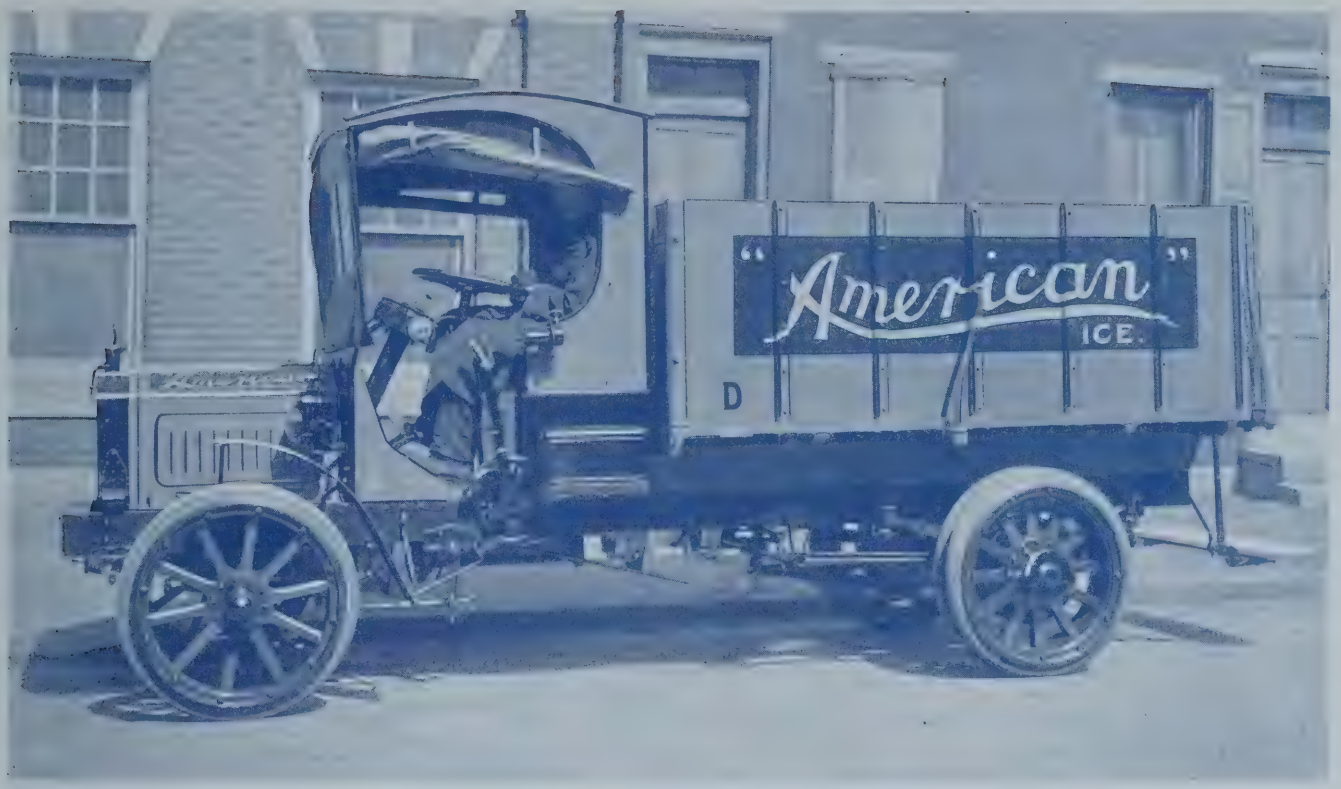
It costs money to harvest or make every ton of ice. It also costs money to distribute it. The ice dealer pays for both. Why waste this investment in meltage when truck speed will save a large part of it for you?

Winter and Summer Hauling

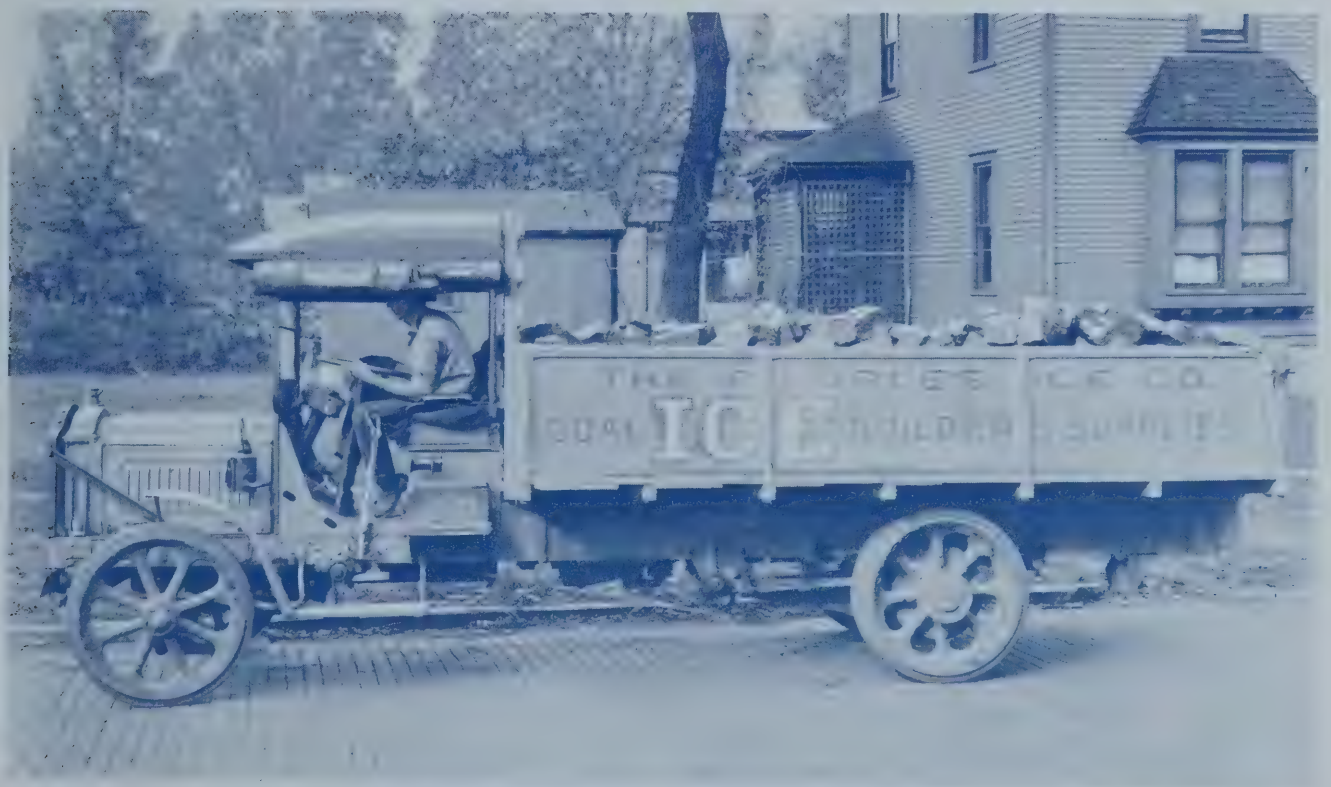
At the peak of the season in the hot summer months nearly every ice distributer has to work his transportation system to the utmost to give service. In the winter he has many horses and trucks on hand unless he is engaged in another line in which they can be used. Sometimes he must rent or buy horses or trucks in the summer and in the winter he has them for rent. It is a difficult matter for an ice distributer to hit an average in his transportation system.

Some distributers have tried selling many horses at the close of the busy season and purchasing others in the summer. But this does not work out well because the new horses are not trained to the work. One of the advantages of the motor truck is that it requires no training. The only mental factor involved is that exercised by the driver, under the supervision of the traffic man.

Of course any distributer who installs a large number of trucks to displace a much larger number of horses and wagons may have the same problem on his hands. Should he be forced to rent trucks in the summer-time, we advise that he rent only the best trucks for the simple reason that they are the most reliable and least subject to breakdown at the rush hour of the day.



"American Ice" is well known to the people of Philadelphia.



A truck that is kept busy in three lines of business.

Could a light truck and drag plow be used to remove snow from ice?

Trucks should be rented on the same basis on which anyone buys them—they must return a profit on the rental price paid.

Climatic conditions have little or no effect on trucks. Trucks run on the hottest summer days when horses fall prostrated in the streets. The ice and snow-covered pavements of winter that cause many a horse to slip and break a leg have likewise no terrors for the motor truck.

Conclusions of General Survey

The foregoing are some of the factors the ice distributer should bear in mind when buying motor trucks. Should you call in one of our transportation engineers to make survey of your transportation problem, you owe it to yourself to give him every assistance possible. Or detail your end of the work to some trusted man.

After the transportation engineer has completed his survey, gone over your plant thoroughly, observed your loading and unloading facilities, your sources of supply, your methods of distribution, worked out your horse and wagon costs, noted opportunities for increase of the business, etc., he will be able in a short time to tell you whether you need motor trucks or not, how many and of what capacity, what kind of bodies should be put on them, how they should be routed in conjunction with horses and wagons or operated without the latter, how many horses, men and wagons you can dispose of, how much your transportation costs will be cut, how many more tons of ice you can deliver in a day, and what it will cost you per ton-mile as compared with horses, and all the other important facts you want to know.

No Charge for Survey

No charge is made by any representative of this organization for a transportation survey and no one for whom such a survey is made is in any way obligated to buy a Packard truck. We are absolutely sincere in this statement and hope you will take advantage of this offer to have a survey of your transportation problem made now.

Packard trucks are strongly built to carry heavy loads of ice.

THE MAKING OF TRANSPORTATION UNITS

Why an ice dealer saves money by purchasing trucks from a permanent manufacturer; what the truck engineer has to do with low operating costs; the importance of control of manufacture from raw material, or as close to that state as possible.

Factory Permanency

THE first essential to which the ice dealer should give attention when purchasing trucks is the reputation of the truck factory, its business life and the probabilities for its continuance. Ice dealers have paid dearly for the experience of buying trucks from short-lived concerns that die, leaving a trail of "orphan" trucks behind them. A permanent factory makes a "going concern" of its trucks and insures for them a comparatively high resale value.

The Engineering Department

In the last analysis, the value of any truck to an ice dealer is not based on its first cost but solely on its ability to render efficient service over a period of years with minimum operating and maintenance charges, or in other words at the lowest ton-mile cost over a period of years.

The one man who has most to do with obtaining lowest operating costs insofar as the design of the truck is concerned, is the truck engineer. All his efforts to this end are controlled by the policy of the factory.

The truck engineers of the Packard Company conceive and plan our truck product under the most encouraging conditions. Their one aim is to turn out a vehicle that will operate at the

When a truck isn't being used for transfer purposes it can haul ice.

A truck saves time, money and labor in hauling from the storage house.

A stoutly-built ice body saves not only repair costs but time too.

lowest attainable ton-mile cost over a period of ten years or even more.

Service Engineer Gets Data

Our truck engineering department is kept in constant touch with the results obtained by owners through a special service engineer and our Technical Service Department as to any conditions arising either through dealers' or owners' comments, which in their minds require immediate engineering action. Besides these methods of observing the truck our engineers get the benefits of their own experiments. They often run a truck 25,000 miles to give it a real try-out or conduct a breakdown test in the laboratory. By such a test we mean one to destruction.

Because of the position this company holds in the automotive industry, its engineering department is requested to try out hundreds of new constructions and new devices, in addition to those we originate ourselves. Ultimately the ice dealer and other business men get the benefit of these tests.

Manufacturing the Truck

Because we actually control more of the manufacture of a truck than any other manufacturer, we are the most complete manufacturers of trucks in the world.

The two things which represent the manufacturing cost of any article are material and labor. The manufacturer who starts his operations with raw material, or as close to that state as possible, has the lowest first costs. The assembler who starts his operations with manufactured parts rather than with raw material, loses the advantages of low first cost and pays in addition a profit to the parts makers for the work they do for converting each individual piece of material into finished or semi-finished parts. There are something like 1,300 detail parts in a motor truck. They are made in many parts' factories, each of which gets its profits from the semi-manufacturer or assembler, who in turn passes these on to the buyer of the truck.

By making as near as possible 100 per cent of

The model plant of the City Ice & Supply Co., Chicago.

these parts in our own factory we are enabled to put not necessarily low costs, but greater accuracy and quality into the parts.

Because we have a complete manufacturing establishment our material costs go back closer to the mines and forests than any other manufacturer. Our material costs are represented by the costs of raw material classed as pig iron, pig copper, pig aluminum, pig tin, forging slabs, hot rolled bars, etc. From the raw material we convert it into our own rough material, that is, we make our own castings and forgings and carry all the pieces on through all the necessary development steps to the finished parts.

The Control of Manufacture

This, of course, enables us to apply our inspection principles farther back to the manufacture of all our parts than any other manufacturer. We have more absolute control over the processes of manufacture than anyone else. There are no parts of Packard trucks which are not inspected as parts through the process of their manufacture. Those parts that are secured from outside sources are inspected at such places by Packard inspectors who are stationed there permanently. No outside company can supply us with parts unless such parts are manufactured up to the Packard engineering standard, and that means the highest standard in the world, as any ice dealer may verify for himself.

The Control of Accuracy

Quality is a comparative term and means nothing. We talk about the accuracy of our product because the ***highest quality*** is obtained only in the control exercised to the point nearest absolute accuracy. This result cannot be obtained by anyone who does not control the inspection points along the line of manufacture of each and every piece.

Every ice man knows there is a great deal of difference between the lowest priced truck and the very best truck.

The in-between grades are more or less alike, according to the degree they are made up of parts secured from the same parts manufacturers.

But these trucks, almost identical as far as parts are concerned, do not by any means sell at or even near the same price for the same capacity unit. Some are as much as $500 apart. The Ice Dealer who does not know about this often pays the additional $500, but he does not get one cent more of truck value than he would from the cheaper truck.

Under the paint of ten different makes is the story of the extent of control of manufacture and accuracy. We have told you our story.

We want you to get the story of every maker.

One of the many Packards hauling ice to Chicago consumers.

THE MAINTENANCE OF TRANSPORTATION UNITS

Intelligent operation and proper maintenance as precautionary measures; carelessness necessitates service repairs; Packard's facilities for supplying parts quickly.

MAINTENANCE of Packard transportation units, keeping them in good condition so they may be operated as near as possible to 100 per cent efficient in the hands of the owner, is the job of our Technical Service Division. Its work is commonly known as "Service."

Because the Packard truck is more simply designed and better built than any truck of which we know, it requires less service than any other truck. We base this emphatic assertion not only on our own observations but on the statements of hundreds of our owners who have operated other makes of trucks.

No business man owning or operating a Packard truck has ever reported to us that it wore out. There are Packards on the streets today that have been there ten years and look good for ten years more. The life of a Packard has never been determined.

Truck Must Get Care

But a motor truck is just like any piece of high-grade machinery. It requires intelligent operation and intelligent care to render the most satisfactory service. Not every truck gets even reasonable care. It is less troublesome not to oil a truck than to oil it. It is neglect of this character that brings trucks to the service station. Careless driving and overloading sometimes result in breakage that must be repaired. Heavy work will in time wear out some of the parts necessitating replacements.

In the work of getting such trucks back on the road in the quickest possible time the factory service department has the co-operation of more than 200 Packard service stations throughout the country. This company is the only motor truck manufacturer that maintains a special plant for the manufacture of service parts. In addition it carries in stock an enormous quantity of spare parts. These parts are ready for immediate shipment to distributers.

In addition to the facilities at the factory, large supplies of spare parts are carried at our large distribution centers immediately available for use. Such cities as Boston, New York, Phila-

The refrigerator truck saves many a gallon of milk for the creamery owner.

delphia, Atlanta, Detroit, Los Angeles and San Francisco carry upwards of $50,000 and more in truck parts. There are more than 200 other places carrying from $500 to $50,000 in spare parts.

Spare Parts Prices

What the facilities for manufacturing spare parts in its own factory mean to Packard truck owners is shown by the following:

Twelve makers of two-ton trucks sell spare parts at an average cost of 16% more than Packard.

Nineteen makers of three-ton trucks sell spare parts at an average cost of 17% more than Packard.

Thirteen makers of five-ton trucks sell spare parts at an average cost of 18% more than Packard.

All Packard distributers have regular inspection days for new trucks over a certain period of time. On the theory that a stitch in time saves nine, Packard owners are urged to send their trucks to the local service station for inspection. It will pay your driver to watch an expert go over the truck and he will learn much that is of value to him and to you.

Schools For All Drivers

In addition to its other functions, local distributerships conduct drivers' schools to which drivers of all makes of trucks are welcome. The schools are conducted by men who are thoroughly familiar with every part of the truck, their separate functions, and the operation of the truck as a unit. Hundreds of Packard owners and drivers attend these schools.

A closer investigation on the part of any ice dealer will, we believe, convince him that Packard does more to keep its trucks in good running order than any other company. It urges the adoption of precautionary measures that cost nothing but save a great deal of money to owners and drivers. When remedies must be applied in the way of spare parts to repair breakage or wear, the parts can be replaced in minimum time.

One of the many Packards hauling artificial ice in Baltimore.

Special Tools Save Time

If you contemplate installation of one or more trucks why not investigate your Packard distributer's service facilities?

Ask him about our Uniform Service Method and the special tools devised by Packard service men to save your time and money in making repairs. This Company and its distributers are constantly striving to make our service methods and facilities better, and we believe they are second to none today.

The establishments of Packard distributers are numbered among the most solid business houses in every city. And their owners are men with whom you can do business on a straightforward basis.

About Ice

A cake of natural ice weighs from 200 pounds upwards varying with thickness.

Meltage on natural ice on wagons in summer is estimated at from 10 to 30 per cent.

A block of artificial ice weighs from 200 to 300 pounds.

Meltage on artificial ice on wagons in summer is estimated at five per cent.

Ice weighs about 56 to 58 pounds per cubic foot.

A gallon of ice weighs about eight pounds.

There are about 750 gallons of ice in three tons.

There are about 1250 gallons of ice in five tons.

The demand for ice is increasing faster than the supply.

Eight years in the service of Pittmans & Dean, Detroit, and still going.

THE UNIT-MILE

WHY and what is it? How it is figured.

THE growing need for comparing the work values of two trucks or for the same truck at different times has led to the development of a unit of measure for this comparison.

Simplicity in methods of truck comparison is desirable, if practical, but they must be practical.

To compare the work of two trucks by considering only their daily mileage is no more practical than to compare the work of two engines by considering only their speed in revolutions per minute, because there are other elements quite as essential to a day's work.

Load Units and Mileage

At present two important items are considered, load units and mileage. It is the various combinations of these two factors that make up the truck's work. Usually a truck making short trips has a large daily tonnage but low daily mileage. When making long trips its daily tonnage is low and its mileage correspondingly high. The actual work might be nearly equal in both cases, but not when viewed from either a mileage or tonnage standpoint.

The two factors taken together have become known as the unit-mile, which can be defined as the work performed by moving a unit of load, for instance "ton," one mile. Any load unit may be used with results as follows: "ton"-mile, "yard"-mile, "gallon"-mile, "M" or thousand foot-mile (referring to the work of hauling a thousand feet of lumber one mile), "package"-mile, etc.

Suppose a truck travels from A to B, a distance of five miles, and carries one ton. This truck has then performed five ton-miles of work. If it had carried three tons it would have accomplished 15 ton-miles. Suppose it now returns empty to the starting point. It has run miles but carried no tons so there can be no ton-miles. This fact has caused most of the misunderstanding of this subject.

Methods Must Be Practical

It is not always practical in the ice business to weigh the load and measure the mileage as each piece is delivered. To follow the definition literally such practice would be necessary, but being impractical we must change the method to produce a result as near right as possible and still keep our process practical.

A Millville, Mass., truck that long ago proved its reliability.

These two conditions have led to the use of two unit-mile terms. The "absolute" ton-mile is the result when following the definition literally. The "commercial" ton-mile is the result when observing the practical rule below. For some time the term commercial was used with a method advocated by the "Commercial Vehicle," but that method was discarded on August 1st, 1919, for the one practised by the Packard Motor Car Company. The word "commercial" will continue in the future to distinguish the result from that obtained by the absolute method.

Most Trips Have Two Parts

The fact that most trips are divided into two parts, an outgoing and return, and that the majority of trucks run empty or with very light load on one of these, has led to the following method for determining the commercial ton-mile:

THE TON-MILE

Five Miles

A B

One ton carried five miles is five ton-miles.

Five Miles

A B

Three tons carried five miles is fifteen ton-miles.

One Mile

A B

Five tons carried one mile is five ton-miles.

Multiply the total units in the period to be measured by one-half the average trip distance. This period may be a trip, day, month or any length of time.

The same result can be found by multiplying the average load per trip by one-half the miles traveled in the period.

Suppose the period is one day, the mileage 48, and the tons carried 24. The truck makes four trips.

First method—24 (units) x 6 (½ average trip) equals 144.

Second method—6 (aver. load) x 24 (½ total miles) equals 144 ton-miles.

Note—If a truck carries a load on both sections of its trip, follow the method above without change, for the average load will be the average carried out plus the average carried in.

Some Laws of Truck Transportation Engineering

Other conditions being equal—cost per day will depend on daily mileage. It increases with mileage.

Cost per mile will depend on daily mileage. It should decrease as mileage increases.

Cost per unit will depend on truck capacity and distance hauled.

Cost per unit-mile will depend on truck capacity and daily mileage. It should decrease with either an increase in capacity or an increase in daily mileage.

MOTOR TRUCKS SUPPLY ROUTE WAGONS

Same Units Haul Coal During the Winter and Give General Satisfactory Performance

TWENTY-FIVE motor trucks and two hundred horses haul ice during the busy season for the Pittmans & Dean Company of Detroit. This company is a pioneer in the use of motor trucks for ice hauling. Its first trucks were put in commission more than ten years ago.

"I am thoroughly satisfied with the performance of motor trucks in ice hauling," says C. A. Dean, Jr., who has charge of the company's motor trucks. "We could not do business without them and as our business increases we shall install more trucks."

Four Packards in Fleet

The four three and one-half ton Packards with thirteen four-ton trucks of other makes and eight one-ton light delivery cars do all of the company's ice hauling. The larger trucks supply the wagons on the routes and transfer ice from one station to another. Supplying the wagons is the regular duty of the heavier trucks. In emergency cases, such as a break-down happening at any of the company's stations, a number of trucks are put on the job immediately hauling ice from another station so that the wagons can start out at the usual time in the morning and then keep supplied until they have finished their routes.

Loading platform at a manufacturing plant.

The smaller trucks are kept busy delivering small quantities of ice that must be sent out in a hurry.

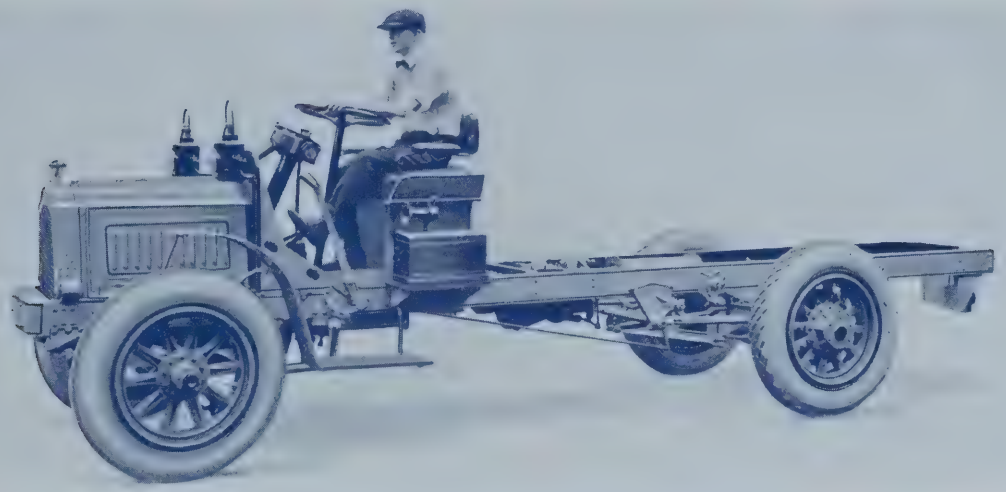
Haul Coal During Winter

During the winter this company's trucks are kept busy hauling coal. They have but one slack season during the year. This usually is in March and April. During this time the trucks are sent to the service stations for any necessary repairs or replacements.

Two of the Packards operated by the Pittmans & Dean Company were delivered in 1912 and are still giving very satisfactory service.

One of the Pittmans & Dean plants and an eight-year-old Packard.

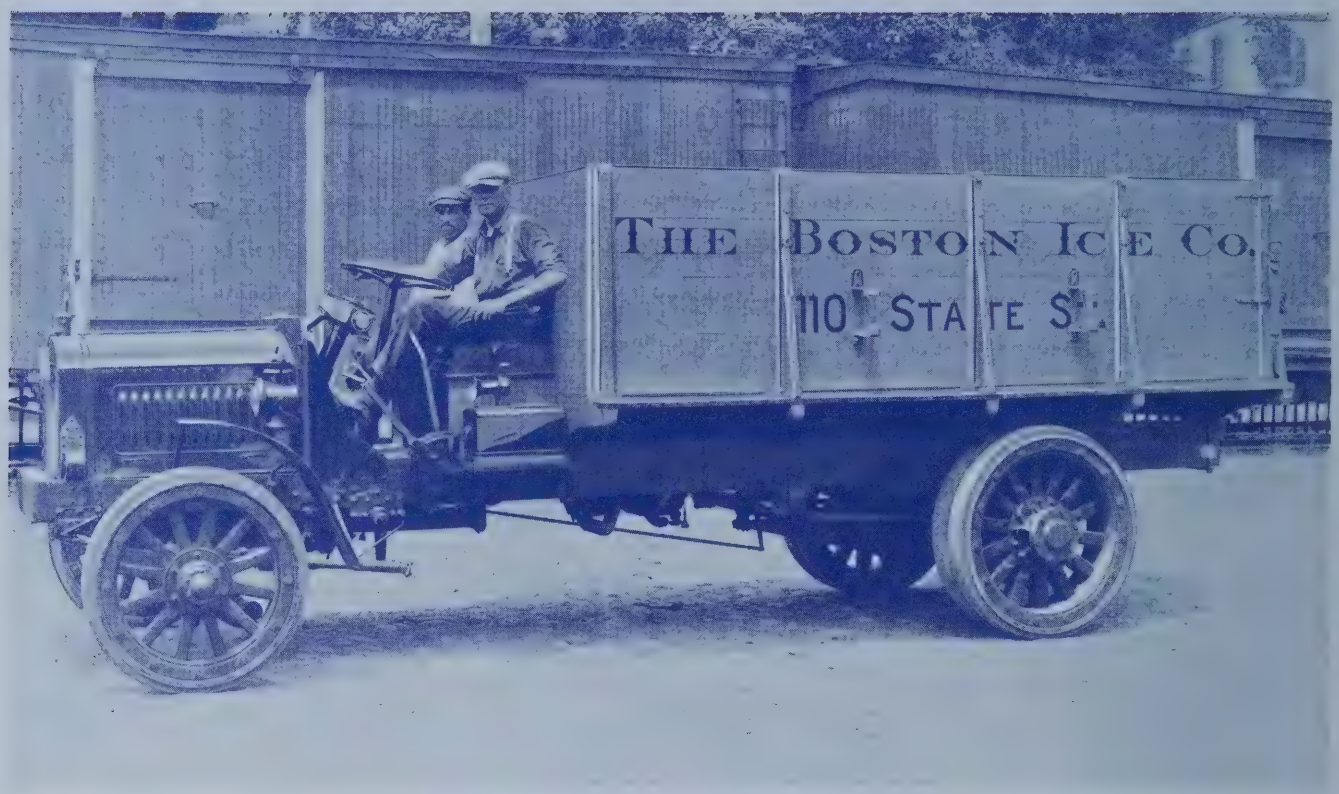
THE PACKARD PNEUMATIC-TIRED TRUCKS



A thirty-mile-an-hour truck for emergency deliveries.

Of greater capacity and a speed of twenty-eight miles an hour.

Built to carry a three-ton load, speed twenty-four miles.



A hard-working Packard owned by the Boston Ice Co.

A Louisville Packard that hauls ice from plant to storage houses.

The company owning this truck long ago learned the value of fast transportation.

TRUCK OPERATING COSTS

What it costs to operate some Packards; figures selected to show the difference in ton-mile costs resulting from efficient and inefficient operation.

"HOW much will it cost to operate your truck?" This is one of the first questions that a business man asks any truck company representative.

Our answer is: "How are you going to operate it, so it will cost more than it ought or as little as possible?"

How to Get Low Costs

The figures that appear on the two following pages prove that our answer is right. One owner operates a truck efficiently and his ton-mile costs are low. Another operates inefficiently and his costs are away up. Naturally when costs go up the company making the truck is blamed.

To get low costs several things are necessary on the part of the owner. First, he should select a truck made by a company that has a reputation for making good trucks; second, that truck should be operated intelligently and given the care that it deserves as a valuable piece of machinery; third, he should keep accurate operating and maintenance costs and records of what it does in the way of work. If he does these few things he is on the right road to low costs.

On the following pages are twelve examples of Packard truck costs, not necessarily selected because some of them are low, but because we want to bring home the lesson of efficient and inefficient operation and their relation to costs.

In running down the Miles per Month column you will find that only four trucks made over 1,000 miles in a month and that several made less than 400, showing intensive use of the truck as against only partial use. The Miles per Day column also indicates these two tendencies.

Trip Distance Has Real Meaning

Some surprising revelations are made in the Trip Distance column. It shows that trucks are rapidly monopolizing the short-distance field. It is worth remembering that the very last entry at the foot of the tabulation for a six-ton truck shows a trip distance of 3.2 miles, 2,832.3 tons hauled in one month and at the low cost of 13⅓ cents per ton-mile. These figures show that the busy truck pays.

RIGHT TRUCK RECORDS SHOW UP LOST MOTION

Owner Number	Capacity	Month		Miles Per Month	Miles Per Day	Cost Per Day	Trip Distance	% of Capacity Load
371	1½ Tons	June	1918	387.5	15.5	6.53	2.8	60
		July	1918	374.	16.2	7.31	3.1	66
		August	1918	467.	20.3	6.89	3.9	53
1118	1½ Tons	Feb.	1919	1394.	55.8	16.91	11.2	86
		March	1919	1112.	48.3	17.87	10.3	83
		April	1919	11.70	49.4	16.91	10.9	86
1095	2 Tons	March	1919	582.	27.7	17.70	3.1	27
		April	1919	615.	25.6	16.72	2.8	25
		May	1919	664.	26.5	18.05	3.1	27
960	2 Tons	May	1919	1097.	42.2	8.97	7.7	62
		June	1919	1158.	46.3	9.02	8.4	65
		July	1919	1296.	49.8	9.67	8.1	65
982	3 Tons	May	1919	851.	34.0	17.82	5.5	57
		June	1919	749.	29.9	16.42	5.4	69
		July	1919	659.	26.3	16.05	5.1	63
22	3 Tons	Feb.	1919	689.	28.3	12.22	9.1	63
		March	1919	707.	27.2	12.30	8.0	58
1116	4 Tons	April	1919	331.	15.0	20.52	2.8	41
		May	1919	618.	22.9	22.12	4.1	49
		June	1919	470.	22.4	20.67	4.7	45
1215	4 Tons	April	1919	687.	28.6	16.00	4.4	62
		May	1919	1124.	44.9	16.70	3.5	66
		June	1919	969.	40.4	16.08	7.4	63
1095	5 Tons	March	1919	521.	21.7	18.93	3.8	32
		April	1919	448.	18.7	18.32	3.5	40
		May	1919	511.	20.4	21.25	3.4	42
1213	5 Tons	Feb.	1919	508.	24.2	16.17	6.9	48
		March	1919	490.	28.8	20.14	7.3	58
		April	1919	679.	37.7	21.86	7.6	54
778	6 Tons	Feb.	1919	613.	27.8	19.26	4.2	65
		April	1919	748.	31.1	18.82	4.6	64
		May	1919	376.	31.3	26.97	4.5	62
1338	6 Tons	May	1919	1162.	44.6	20.70	3.9	51
		June	1919	1224.	48.9	20.76	3.8	51
		July	1919	1446.	57.8	24.03	3.2	51

LOWEST TON-MILE COSTS MEAN MORE PROFITS

Cost Per Ton	Tons	Tons Per Day	Cost Per Ton-Mile	REMARKS
.66	245.7	9.8	.476	A low daily mileage with the average load capacity indicated raises the ton-mile cost to nearly double the next truck of the same capacity, which has a high daily mileage and high load efficiency.
.70	238.2	10.3	.474	
.83	190.1	8.3	.438	
1.32	320.	12.8	.233	
1.50	275.	11.9	.294	
1.39	292.	12.1	.257	
1.92	193.3	9.2	1.282	Truck 1095 uses a helper, has a 20% per year depreciation charge and carries heavy insurance. This accounts for its high daily cost as compared with truck 960. With the high daily cost of 1095 is a low daily mileage and low load efficiency.
1.62	249.0	10.3	1.161	
2.10	215.6	8.6	1.357	
.65	458.	13.7	.167	
.63	359.	14.3	.150	
.61	409.	15.7	.152	
.83	535.5	21.4	.303	The difference in cost per ton is due to a difference in trip distance. A high administrative overhead and insurance causes 982 to cost more per day and per ton-mile than 22.
.72	567.7	22.7	.264	
.83	484.	19.3	.326	
1.03	285.	11.8	.228	
1.02	312.5	12.0	.258	
1.16	387.8	17.6	.827	The lower load efficiency and daily mileage and the use of a helper on 1215 makes its costs per day, per ton, and per ton-mile much more than those of 1116.
1.00	598.1	22.1	.488	
1.19	364.2	17.3	.510	
.49	777.7	32.4	.224	
.24	1682.3	67.3	.141	
.58	662.2	27.6	.157	
1.03	440.8	18.3	.540	With a greater daily mileage and load efficiency 1213 shows a lower cost per ton-mile than 1095. The cost per ton on 1095 is greater than 1213 because it uses a helper without accomplishing enough extra work to counteract his cost.
.84	524.5	21.8	.494	
.85	624.3	24.9	.502	
.95	358.	17.0	.271	
.88	386.	22.7	.242	
.81	484.	26.9	.213	
.37	1137.4	51.7	.178	Higher insurance and garage rent for 778 accounts for its greater proportionate cost per day. The effect of greater daily mileage is clearly evident in the ton-mile cost of 1338 over 778.
.37	1233.	51.4	.159	
.52	625.	52.1	.230	
.29	1837.2	70.6	.149	
.26	1991.9	79.7	.137	
.21	2832.3	113.3	.133	

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